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THREE-DAY-A-WEEK-TRAPNESTING

by Albert B. Godfrey, Geneticist
National Poultry Improvement Plan

A number of studies of trapnest records has shown that a breeder will lose some accuracy in his records on an individual basis when he trapnests only three days a week. When he summarizes his records on a family basis, however, any inaccuracy will tend to be reduced to a point where it would be of no consequence in a breeding program in which selection is primarily based on results from progeny testing. One general recommendation in the past has been that breeders should trapnest sufficient daughters to progeny test at least 10 sires and 50 dams. About 400 pedigreed candidates should be trapnested to progeny test this number of families adequately. A breeder could trapnest one group of birds the first three days of the week and another group of birds the last three days of the week, thus enabling him to progeny test twice as many sires and dams.

We would not recommend that a breeder adopt such a program merely to reduce his labor if he did not trapnest more than 200 to 400 birds. He should adopt such a program if it will enable him to trapnest more birds and thereby progeny test more sires and dams.

A study was made on the accuracy of three-day-a-week trapnest records at the Beltsville Research Center of 400 Rhode Island Red and 428 White Leghorn individually pedigreed pullets. The Rhode Island Reds were the daughters of 9 sires and 56 dams and the White Leghorns were the daughters of 10 sires and 61 dams. Only the dams with 5 or more daughters were included in the study. The total number of eggs laid on 3 consecutive days each week were determined for each daughter. The estimated egg production was then obtained by multiplying the values obtained by seven-thirds. The resulting estimated record was then compared with the actual record obtained for the complete 365-day period.

The comparison of the estimated record with the actual record is summarized by sires for both breeds in table 1. The average egg production on the basis of daily and 3-day-a-week trapnesting is 198.0 and 197.5, respectively, for the Rhode Island Reds and 200.2 and 199.0, respectively, for the White Leghorns. The average difference between the actual and the estimated record as given in the right-hand column of the table shows very low values for each sire. It could be concluded from this table that the estimates are practically as accurate as the actual record in evaluating sires on the basis of their daughters' egg production records.

To illustrate the accuracy of evaluating the dams on the basis of their daughters' estimated records, the family record for the dams mated with the first White Leghorn sires listed in table 1 is summarized in table 2. Dam 3,693 mated with sire 3 had one less daughter to qualify on the basis of the estimated record. One daughter whose actual record was 204 eggs had an estimated record of 184 eggs. Two daughters of dam 3,466 and sire 50 had actual records of 207 and 211 and estimated records of 198 and 194, respectively. Dam 3,466 had five daughters varying as follows:

seven-day record	three-day record
198	208
196	203
206	180
209	198
200	198

It will also be noted in table 2 that the daughters' average egg production is high for the first male, low for the second male, and intermediate for the third male. If a poultry breeder were selecting sons and daughters to be used in future U.S.R.O.P. matings on the basis of their family records, it is apparent that his selection would be about the same whether he trapped daily or 3 days a week.

Of the 36 daughters of sire 3 qualifying for production, 27 laid more than 225 eggs, 15 laid more than 250, and 5 laid more than 275. Therefore, the majority of these daughters would likely be used. He would also select 1 or more sons probably from dam 3,693 and dam 3,769 and for this purpose the estimated averages would be just as adequate as the actual record. Only 5 of the 13 daughters of sire 50 laid more than 225 eggs and 1 laid more than 250. A breeder would question the advisability of using any of these qualifying daughters and he certainly would not use a son in a U.S.R.O.P. mating. Just how much consideration a breeder would give to sire 91 would also depend upon how many breeding males and females he needed for his breeding program since, according to table 1, four other males of that breed appear to have better family records. Ten of the two qualified daughters laid more than 225 eggs, but only three laid more than 250. A breeder would be interested in using some of the seven qualifying daughters of dam 3,299 and possibly a son, since seven out of seven qualified. At least he would use the dam again with some other male.

It would be understood, of course, that the breeder's selection would depend upon the information regarding numerous other factors in his breeding program such as egg weight, body weight, range livability, rate of growth, rate of feathering, breed type, etc.

In order to show the variation of the average difference between the actual production and the production based on 3-day records for all the dams including the 18 listed in table 2, frequency distributions were constructed as shown in table 3. As has been previously stated, each of these families had 5 or more daughters. Although the majority of the average differences are very close to zero, they vary from minus 8.6 to plus 9.3. An extreme case was a Rhode Island Red family with an average variation of 9.4 eggs. The records for the daughters of this family were as follows:

seven-day record	three-day record
225	273
115	124
259	261
214	219
242	254
257	273
234	238

It is apparent then that this extreme case would affect very little a breeder's judgment in selecting breeding birds on a family basis.

It can be concluded that the estimated records from 3-day-a-week trapnesting are accurate enough for all practical purposes for selecting breeding birds on the basis of family records. On the other hand, in numerous instances a poultry breeder has only the individual record of a female or, in the case of a male, his dam's individual record. In such cases and also in selected individuals from families that have about the same averages as all of the flock, an inaccurate estimation of the individual records may be of some significant value. Any extreme discrepancy of individual records has a special significance in the minds of the purchaser of breeding stock.

Table 4 gives frequency distribution of the difference between the actual records and those estimated 3-day records for all the individual daughters used in this study. It will be noted from a study of this table that in the case of the estimated records for 3-day trapnesting 50.2 percent of the Rhode Island Reds and 44.6 percent of the White Leghorns did not vary more than 5 eggs from the actual record, but 6.2 percent of the Rhode Island Reds and 7.9 percent of the White Leghorns varied more than 15 eggs.

TABLE 1 -- A comparison of 3-day-a-week calculated egg production records with the actual records for the daughters of each sire.

Breed	Sire No.	No. daughters trapnested	Ave. egg Production		Difference
			7-day record	3-day record	
R.I.R.	173	46	215.8	213.7	-2.1
"	200	46	194.7	193.0	-1.7
"	330	69	196.5	196.4	-0.1
"	334	22	204.6	206.4	+1.8
"	338	49	187.8	186.8	+1.0
"	351	58	170.3	170.3	0.0
"	352	31	197.5	196.7	-0.8
"	368	49	207.0	206.8	-0.2
"	10105	30	229.9	227.9	-2.0
Total or average		400	198.0	197.5	-0.5
W.L.	3	44	232.6	230.8	-1.8
"	50	46	173.1	172.2	-0.9
"	91	42	202.4	202.6	+0.2
"	100	44	204.7	203.4	-1.3
"	249	53	207.6	204.2	-3.4
"	250	25	230.4	227.6	-2.8
"	252	34	199.4	198.9	-0.5
"	254	37	196.6	195.6	-1.0
"	259	60	188.6	189.6	+1.0
"	10106	43	182.7	180.2	-2.5
Total or average		428	200.2	199.0	-1.2

TABLE 2 -- A comparison of 3-day-a-week calculated egg production records with the actual records for the daughters of the first three White Leghorn sires listed in table 1, by dams

Sire No.	Dam No.	No. daughters trapnested	No. daughters qualifying for egg production on basis of:		Average Egg Production		
			7-day record	3-day record	7-day record	3-day record	Difference
3	3428	9	6	6	233.8	235.9	+1.9
	3693	12	10	9	235.1	230.5	-4.6
	3767	6	5	5	219.2	216.7	-2.5
	3769	5	5	5	255.0	253.4	-1.6
	3824	7	6	6	231.6	230.9	-0.7
	4145	5	4	4	220.0	216.6	-3.4
Total or average		44	36	35	232.6	230.8	-1.8
50	2786	5	0	0	158.8	166.0	+7.2
	3289	11	3	2	180.0	178.5	-1.5
	3466	8	5	3	199.1	194.2	-4.9
	3695	11	5	5	194.0	193.2	-0.8
	4512	11	0	0	133.1	131.9	-1.2
Total or average		46	13	10	173.1	172.2	-0.9
91	3299	7	7	7	225.6	224.3	-1.3
	3562	5	2	2	196.6	195.6	-1.0
	3640	8	5	5	213.8	212.5	-1.3
	3728	5	4	4	213.4	213.8	+0.4
	3845	5	2	2	174.8	172.6	-2.2
	4541	7	3	3	196.9	197.3	+0.4
	4545	5	2	2	182.0	189.8	+7.8
Total or average		42	25	25	202.4	202.6	+0.2

TABLE 3 -- Frequency distributions of the calculated average egg production for the daughters of each dam showing the deviations from the averages for the actual records.

Average Variation in Number of eggs	Rhode Island Reds		White Leghoms	
	No. Families	Percent	No. Families	Percent
-7.1 to -8.6	1	1.6	4	7.1
-5.1 to -7.0	6	9.8	3	5.4
-3.1 to -5.0	8	13.1	7	12.5
-1.1 to -3.0	15	24.6	9	16.1
-1.0 to +1.0	19	31.1	13	23.2
+1.1 to +3.0	7	11.5	13	23.2
+3.1 to +5.0	2	3.3	1	1.8
+5.1 to +7.0	1	1.6	5	8.9
+7.1 to +9.4	2	3.3	1	1.8
Total	61		56	

TABLE 4 -- Frequency distributions of the calculated egg production showing the deviations from the actual records.

Average Variation in Number of eggs	Rhode Island Reds		White Leghorns	
	Number birds	Percent	Number birds	Percent
-21 or more	5	1.2	3	0.7
-16 to -20	6	1.5	23	5.4
-11 to -15	40	10.0	36	8.4
-6 to -10	54	13.5	72	16.8
-5 to +5	201	50.2	191	44.6
+6 to +10	49	12.2	72	16.8
+11 to +15	31	7.8	23	5.4
+16 to +20	10	2.5	4	.9
+21 or more	4	1.0	4	.9
Total	400		428	